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Community and Institutional Responses to Flood Disaster in Osogbo, Nigeria

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Abstract

Flood occurrence often generate significant physical, social, economic, and environmental disruptions with attendant threat to lives, sources of livelihood, and businesses. In many cases, individuals, and communities experience great difficulties as they attempt to recover from the impacts of floods. Individual, communities, and institutions often develop strategies for flood reduction and management. This study examines community and institutional responses to flood management in Osogbo, Nigeria. Using a systematic sampling technique, it extracts responses from 110 residents in six flood prone areas in Osogbo. Frequency distribution was employed to analyze data collected. Findings revealed that though communities contributed to flood management in Osogbo, bulk of the efforts was initiated and implemented by the Osun State government. The study recommends a joint and inclusive strategy for flood management thereby ensuring that community efforts complement government interventions in the management of flood disaster in Osogbo, Nigeria.

Keywords: floods, community participation, institutional responses, government, disaster management

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1. 0 Introduction

Millions of people are regularly affected by disasters such as droughts, floods, volcanic activities, landslides, cyclones, earthquakes, hurricanes, tornadoes, blizzards, tsunamis, epidemics, and wildfires (European Commission [EC], 2013). The occurrence of these disasters generates significant negative effects on the physical, social, and economic aspects of human life. According to Food and Agricultural Organization [FAO] (2008), between 2000 and 2005, about 240 million people were affected annually by disasters globally. Also, during each of these six years, these disasters claimed an average of 80,000 lives and caused damage of an estimated US$ 80 billion. Along this line, Dey and Singh (2006) asserted that the global economic loss related to disaster events is around US$880 billion per year.

Floods are commonly believed to be the oldest and most devastating disaster in the history of the world. Every year, they cause tremendous losses and social disruptions globally (Vanneuville, Kellens, De Maeyer, Reniers, and Witlox, 2011). Floods have both natural and anthropogenic dimensions. Oriola (1994) established that floods are induced by climate change as well as by man's improper utilization or abuse of the physical environment. Land use development and changes in built up areas are major causes of floods in many urban areas across the world (Adigun, Abolade, and Yusuf, 2013; Okon, Ogba, Idoko, Eni, and Sule, 2015).

Extant literature established that inadequate drainage system, changes in ecosystem through the replacement of natural and absorptive soil cover with concrete, deforestation of hillsides, and silting up of drainage channels are main causes of flooding in Nigeria. Cases of flooding have been documented in many states across Nigeria and each of these cases have similar characteristics particularly in cause and effect. Floods in Nigeria occur mainly during raining season and have resulted in loss of lives, livelihood, houses, investments, and displacement of people (Oriola, 1994; Aderogba, 2012; Orunonye, 2012; Adigun, Abolade, and Yusuf, 2013; Nigeria Hydrological Services Agency, 2014; Emeribeole, 2015).

Flood occurrence in Nigeria has sparked interest among individuals, communities, government, policy experts, researchers, and relief organizations (Akintola, 1982; Aderogba, Oredipe, Oderinde, and Afelumo, 2012; Aderogba, 2012). In recent times, more research has been carried out to detail the cases, causes, effects, and responses to flood disasters in the country. Also, more interventions have been provided to ameliorate the effects of flood disasters in Nigeria. Individuals and communities have also strategized and mobilised resources to reduce the effect of flood disasters in Nigeria. These efforts have been matched by institutional responses such as the

establishment of the National Emergency Relief Agency (NERA) in 1976, a post-disaster agency which was to assist communities recover from the impact of disasters in the country. In 1999, the National Emergency Management Agency (NEMA) was established to replace NERA.

Community members often mobilize themselves to contribute to disaster management. This involvement of communities is premised on the need for indigenous solutions to disasters as well as the limitation of external support in disaster management. According to Victoria (2006), community participation in disaster management is the additional element necessary to reverse the worldwide trend of exponential increase in disaster occurrence of and loss from small - and medium – scale disasters, build a culture of safety and ensure sustainable development for all. Community participation is also an approach to correct the defects of the top-down approach to disaster management which has failed to address local needs, ignored the potential of local resources and indigenous capacities, and may have even increased people's vulnerability to disasters (Bazarragchaa, 2012).

This paper inquired into the involvement of residents, community organizations, and government institutions in flood management in Osogbo, Nigeria. To achieve this, it examined the socio-economic attributes of residents in the flood-prone areas of Osogbo, determined the causes and cases of flood disaster in the study area, and identified community and institutional approaches to flood management in Osogbo. The paper is concluded with recommended solutions for effective flood management.

2. 0 The Study Area

Osogbo, which is the study area, lies between 7°42'N and 7°50'N and 4°30'E and 4°36´E and has an elevation of over 500m above sea level. According to the National Population Commission [NPC] (2006), the population of Osogbo was 288,455 and covers an area of approximately 144 km2. Osogbo is about 190 km/120 miles northwest of Lagos. The city assumed the status of the state capital following the creation of Osun State in 1991. There are two local government areas are in Osogbo. They are Osogbo Local Government Area and Olorunda Local Government Area.

The climate of the study area is a tropical hinterland type with mean annual temperature of about 27°C. It experiences two climatic seasons (dry season between late November and early March and a wet season between late March and early November) with mean annual rainfall of 1000 to 1250 mm. The climate is controlled by two prevailing air masses, the tropical maritime (mT) and the tropical continental (cT). Osogbo falls within the lowland tropical rain forest vegetation most of which had since given way to secondary forest and derived savannah. Soil distribution reflects both the climatic conditions and geological structure of the area. The soil in and around Osogbo is deep and rich and primarily derived from coarse and granite rocks.

Osogbo is drained by Osun and Ogbagbaa Rivers. The drainage system of Osun River rises in Oke-Mesi ridge, about 5 km North of Effon-Alaiye on the border between Oyo and Ondo States of Nigeria and flows North through the Itawure gap before winding its way Westwards through Osogbo and Ede and Southwards to enter Lagos lagoon about 8 km east of Epe in Lagos State. Ogbaagba River is a tributary river to Osun River (Olajire and Imeokparia, 2000). It is located on the Northwest side of river Osun. Loremikan (2011) opined that the areas that are most vulnerable to perenial flooding in Osogbo are those located along the course of Ogbaagba River.

Orimoogunje, Fashae, Oke and Akinwumiju (2016) recognized that different areas of Osogbo have varying vulnerability to flood risk. According to them, flood vulnerability is increased by blockage of the natural flow of river and rainwater because of the increasing development of structures on the natural slopes. Loremikan (2011) identified that Rasco area, Iso Pako, Alekuwodo, Trumpeters' Church, Old Cola-Cola and Osun Brigde are directly affected by flood. In all, about 36.94% of Osogbo is vulnerable to floods (Orimoogunje, Fashae, Oke and Akinwumiju, 2016).

3.0 Literature Review

3.1 Flood Disasters: Overview, Types, and Causes

Floods are relatively high flows that over-top the natural or artificial banks in any stream (Chow, 1964; University of Wisconsin Disaster Management Centre, 2006). They are temporary covering of lands, which are not normally covered, by water. Floods occur when excess water fails to flow in any definite channel but spreads over land that is normally dry (Ogunbodede and Sunmola, 2014). They may also result from the volume of water within a body of water, such as a river or lake which overflows or break levees, with the result that some of the water escapes its usual boundaries (Ayoade, 1983). Flooding is a natural process that can happen at any time in a wide variety of

locations (Office of Public Works [OPW], 2009).

Floods are the most common and destructive of all natural disasters in the world (Oruonye, 2012; Emeribeole, 2015). Though floods are the most common natural disaster and cause the greatest number of deaths and the most damage, the danger that they present is often underestimated (Miller, 1997). Annually, floods cause tremendous losses and social disruptions globally (Vanneuville, Kellens, De Maeyer, Reniers, and Witlox, 2011). Flood disasters result from the interaction between extreme hydrologic events and environmental, social, and economic processes. (Associated Programme on Flood Management [APFM], 2006).

Several authors have contributed on the types and causes of flooding (IFRC, 2003; APFM, Social Aspects and Stakeholder Involvement in Integrated Flood Management, 2006; CBSE, 2006; APFM, 2008; OPW, 2009; Etuonovbe, 2011; Ogunbodede and Sunmola, 2014). Heavy rainfall, heavy siltation of riverbeds, blockage of flood-ways and drains, landslides which block the flow of streams, construction of dams and reservoirs and strong winds accompanied by heavy down pour along with storm surge in areas prone to cyclone are general causes of floods in both rural and urban areas (CBSE, 2006).

Similarly, Ogunbodede and Sunmola (2014) stated that flooding is caused by rainfall, base water flow, spring water flow, socio-cultural activities, ocean/lagoon surge, illegal channelization of drains, constructions and reconstructions, blockage of canals, inadequate provision of drainage channels, non-compliance with regulations, construction on drainage channels, encroachment/land reclamation, poor heeding to flood predictions, poor physical planning, global warming and climate change negligence, collapsed bridges and culverts, farming along floodplains, building along water flow path, dumping of refuse in drains and drainage paths and concretization of urban surfaces.

OPW (2009) categorised flooding into two broad types. These are coastal flooding and inland flooding. Coastal flooding result from the overflow of the sea into the land due to storm surges that develop when sea levels are higher than normal. On the other hand, inland flooding is caused by prolonged and/or intense rainfall. Inland flooding can further be categorised into three types which are overland flow, river flooding and flooding from artificial drainage systems.

According to Fadairo (2013), flooding is essentially attributable to climatological and anthropogenic factors. Heavy and prolonged rainfall are climatological factors that induce flooding. The anthropogenic causes of flooding are traceable to man's interaction with his environment. This can be in terms of urbanization, agricultural activity, and deforestation. Fadairo (2013) concluded that in most urban areas, the major cause of flooding is anthropogenic.

3.2 Cases of Flooding in Nigeria

Several flood cases have been reported in Nigerian cities such as Lagos, Port Harcourt, Uyo, Warri, Osogbo, Benin, Aba and so on. A chronological view of floods in Nigeria includes Asa flood at Ilorin in 1976, Lisaluwa and Arogo flood in Ondo in 1988 and 1995, Ogunpa River flood in Ibadan in 1978, 1980, 1981, 1985, 1987 and 1988, Osun River flood in Osogbo in 1992, 1996 and 2002, Yobe River flood in 2000, River Ala flood in Akure in 1996, 2000, 2002 and 2004, Lagos flood in 1984, 1988 and 1995, Kano and Dekina floods in 1988, Lafia, Patigi, Kpada and Gbogbondogi floods in Kwara State in 1997, Indiegore flood of 1981 and 2012 in Aba as well as Jos, Gombe, Kaduna and Bauchi floods in 2013.

Also, the burst of certain Nigerian dams has resulted in flooding. The Yobe's flood which occurred in 2012 resulted from the burst of a dam. Similarly, the burst of Ojirami Dam in Edo State (1981), Bagauda Lake Dam in Kano State (1988), Goronyo Dam in Sokoto State also led to flood incidences which consequently resulted in the flooding of roads, settlements and farms, property, and hardship on neighbouring communities. According to BBC News (2018), heavy rainfall lead to the overflow of Niger River and Benue River and this resulted in a series of floods across the country. although Niger state was terribly affected by the floods, other states such as Kwara, Benue, Kogi, Adamawa, Taraba, Kebbi, Bayelsa, Edo, Anambra, Rivers, and Delta were also affected by the floods (Davies, 2018; BBC News, 2018).

3.3 Impacts of Flooding

Although it has been identified that floods may have some positive impacts particularly as it may ensure the provision if crucial water resources, rich biodiversity, abundance of fish, the rejuvenation of river ecosystem and the enrichment of soils along flood plains (APFM, 2006; OPW, 2009), it negative impacts are far reaching

and overwhelming. The most significant negative impact of floods is the loss of lives and property CBSE (2006). Immediate impacts of floods include loss of human life, damage to property, destruction of crops, loss of livestock, non-functioning of infrastructure and deterioration of health condition owing to waterborne diseases (APFM, 2006).

Floods also cause physical injury, illness, and loss of life (OPW, 2009). United Nations Human Settlement Programme [UN-Habitat] (2003) revealed that flooding and poor drainage conditions have a substantial negative impact on the occurrence of illness. Outbreak of diseases and epidemics may also occur from disrupted water supply and sanitation systems which are consequences of large-scale flooding. Floods may also promote the spread of malaria as floodwater provides breeding places for mosquitos which are pathogens for malaria.

Damage to property and infrastructure are also among the negative impacts of floods. To Fadairo (2013), the whole lengths of urban streets are often rendered impassable both to vehicular and pedestrian traffic as aftermaths of floods. Consequent to the disruption and damage of communication links and infrastructure, economic activities come to a standstill and this result in loss of livelihoods. Factories and businesses are affected and there is a consequent loss of jobs. In agrarian communities, loss of crops results from flooding. Long-term impacts such as disruptions to clean water and electricity, transport, communication, education, and health care can also result from flooding. Floods also have negative psychosocial effects on people and communities. Flood victims are often left traumatized for a long time following the loss of loved ones as well as from the loss of valuables.

3.4 Flood Management

Flood management involves a combination of strategies set to minimise the risks arising from flooding to people, property, and the environment. This can be achieved through structural measures that block or restrict the pathways of floodwaters, such as river or coastal defences, or non-structural measures that are often aimed at reducing the vulnerability of people and communities, such as flood warning, effective flood emergency response, or resilience measures (e.g., public preparedness for flood events) for communities or individual properties (OPW, 2009).

Flood management includes flood risk assessment, flood prevention and mitigation and flood preparedness. The aim of flood risk management is to minimize human loss and economic damages, while making use of the natural resources for the benefit and well-being of the people (APFM, 2008). According to APFM (2008), the basic steps of an integrated flood risk management process should include: risk assessment, planning and implementation of measures, and evaluation and risk reassessment. Before flood mitigation measures are planned or implemented, a comprehensive process of understanding, analysing and assessing flood risk is need.

In recent times, communities and institutions have played critical roles in response to flood disasters. They often provide interventions and reconditioning in situation of floods. Interventions often come as creating an alert, rescue, damage mitigation, and giving information and/or instruction. Response to flood disasters can also be in the form of reconditioning which sees to the repair of damaged structures and infrastructure, improvement of supply and disposal systems, strengthening of collapsed transport systems, improving communication, financing, and instituting emergency legislation. Reconstruction is the focus of recovery in the flood management cycle. Definitive repair, reconstruction, strengthening of resilience and financing are effective steps to recovery from the impacts of floods.

4. 0 Research Methodology

The study adopted a questionnaire survey. Loremikan (2011) identified flood prone areas in Osogbo to comprise Alekuwodo, Gbonmi, Iso-Pako, Osun Bridge area, Rasco area, and Sabo area. A total of 110 questionnaire was administered on residents of these identified flood prone area following a systematic sampling technique. Of these 110 respondents, 28 were from Alekunwodo, 17 from Gbonmi, nine from Iso Pako, 15 from Osun Bridge area, 23 from Ratsco area an 18 from Sabo area. Data were analysed using relevant descriptive and inferential statistical analysis.

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5. 0 Research Methodology

5. 1 Socio-Economic Characteristics of Respondents

Table 1: Socio-Economic Characteristics of the Respondents

Variables	Levels	Frequency (f)	Percentage (%)
Sex	Male	60	54.5
	Female	50	45.5
	Total	**110**	**100**
Age	Less than 20	7	6.4
	20-29	20	18.2
	30-39	25	22.7
	40-49	25	22.7
	50-59	13	11.8
	60 and above	17	15.5
	No response	3	2.7
	Total	**110**	**100.0**
Marital Status	Married	81	73.6
	Single	21	19.1
	Widowed	6	5.5
	No Response	2	1.8
	Total	**110**	**100.0**
Educational Qualification	Primary Education	26	23.6
	Secondary Education	57	51.8
	Tertiary Education	19	17.3
	No Response	8	7.3
	Total	**110**	**100**
Occupation	Artisanship	17	15.5
	Private Employment	8	7.3
	Civil Service	9	8.2
	Retired	3	2.7
	Schooling	6	5.5
	Unemployed	1	0.9
	Self-employed	66	60
	Total	**110**	**100.0**
Household Size	1–3	27	24.5
	4–6	52	47.3
	7–9	17	15.5
	10 and above	2	1.8
	No Response	12	10.9
	Total	**110**	**100.0**
Monthly Income	Less than 10,000	19	17.3
	10,000-20,000	46	41.8
	20,001-30,000	14	12.7
	30,001-40,000	4	3.6
	40,001-50,000	12	10.9
	Above 50,000	6	5.5
	No Response	9	8.2
	Total	**110**	**100.0**

Source: Field Survey (2017)

A descriptive analysis of the respondents' demographics is presented in Table 2. The table indicates that the gender distribution of the respondents is 60 (54.5%) for males and 50 (45.5%) for females with the highest respondents between ages 30 – 49 years. By implication, the distribution suggests that the respondents are largely adults who can provide a detailed account on the various responses to floods in Osogbo and at the same time are expected to suffer significant losses in the incidence of flood. This is complemented by the fact that a reasonable proportion of these respondents are married (73.6%) as married people are often expected to have a certain degree of maturity

and emotional stability. Also, the distribution suggests that many of the respondents live as families rather than as single. By implication, incidence of floods should have deep and far-reaching effects on the family. As such, these respondents are expected to fully understand the risk posed by floods. This is further corroborated by the finding that about 64.6% of the respondents live in family units with more than three members.

With a very high percentage of the respondents without tertiary education (75.4%), the nature of their involvement as well as the nature of their contributions can be pre-imagined. As revealed later in the study, many of the respondents only understood flood risk and mitigation measures. The occupational distribution reveals that majority of the respondents are employed in the informal sector though the income distribution showing that majority of the respondents (71.8%) earned below ₦30,000 suggests that most of these respondents are not financially successful in the informal sector. The income distribution also confirms the position of USAID (2011) where it was stressed that virtually all disaster studies show that the economically poor and disadvantaged are often vulnerable to flood risk and are often found on flood prone areas where they are poised with greater risks. The income distribution also suggests a possible limitation in the availability of financial contributions for flood reduction in the flood prone areas of Osogbo.

5. 2 Causes of and Losses from Floods

Table 2: Distance between Respondents' Houses and River Channel

	Frequency	**Percentage (%)**
Less than 100 metres	66	60.0
100-199 metres	26	23.6
200 metres and above	15	13.7
No Response	3	2.7
Total	**110**	**100.0**

Source: Field Survey (2017)

Table 2 above presents the distribution of respondents by their proximity to river channel. With about 60% living less than 100 metres away from river channel, they experience greater risk in situation of river flooding. Thus, they have an increased vulnerability to flood disaster. Possible explanations for this choice of residential location might be because of their income structure as well as the rental situation in these flood prone areas (Wisner, Blaikie, Cannon and Davis, 2004).

Table 3: Frequency of Flood Occurrence

	Frequency	**Percentage (%)**
Frequently	17	15.5
Occasionally	85	77.3
Rarely	7	6.4
No Response	1	0.9
Total	**110**	**100.0**

Source: Field Survey (2017)

Table 3 above established the occurrence of floods in the study area. Though the table suggests a differentiation in perception of the frequency of flood disasters, over 99% confirmed that there have been incidences of floods in the study area.

Table 4: Causes of Floods

	Response	Frequency	Percentage (%)
Rainfall	Yes	98	89.1
	No	12	10.9
	Total	**110**	**100.0**
River	Yes	106	96.4
	No	4	3.6
	Total	**110**	**100.0**
Dumping of Refuse in Drainage Channels/Poor Sanitation	Yes	56	50.9
	No	54	49.1
	Total	**110**	**100.0**
Blockage of Canal	Yes	46	41.8
	No	64	58.2
	Total	**110**	**100.0**
Lack of Planning	Yes	2	1.8
	No	108	98.2
	Total	**110**	**100.0**
Construction	Yes	6	5.5
	No	104	94.5
	Total	**110**	**100.0**
Poor Drainage System	Yes	72	65.5
	No	38	34.5
	Total	**110**	**100.0**
Covering of Soil with Concrete Leading to Imperviousness	Yes	1	0.9
	No	109	99.1
	Total	**110**	**100.0**
Construction of Dams and Reservoirs	Yes	2	1.8
	No	108	98.2
	Total	**110**	**100.0**

Source: Field Survey (2017)

A perceptional analysis of the causes of floods in the study area is presented in Table 4. The distribution suggests that the leading causes of flooding in Osogbo are overflow of rivers, rainfall, dumping of waste in drainage channels, and blockage of canals with frequencies of 96.4%, 89.1%, and 50.9%, and 41.8% respectively. Lack of planning, construction, poor drainage system, covering of soil with concrete, construction of dams and reservoirs, and the burst of water pipes are other identified causes of floods in the study area. The distribution is suggestive that Osogbo largely experiences inland floods following OPW (2009) classification of the causes of floods.

Table 5: Impacts of Flooding on the Study Area and the Associated Level of Severity

Impact	**SWV**	**TNR**	**RLQI**	**MD**
Loss of lives	158	110	1.44	-1.68
Damage to and Loss of Infrastructure	461	110	4.19	1.07
Traffic Congestion	410	110	3.73	0.61
Damage to Road	368	110	3.35	0.23
Disruption of Electricity Supply	224	110	2.04	-1.08
Loss of Possession and Household Items	465	110	4.23	1.11
Health Problems	173	110	1.57	-1.55
Disruption of Civic and Economic Activities	445	110	4.05	0.93
Loss of Businesses and Sources of Livelihood	414	110	3.76	0.64
Loss of Land for Agriculture	294	110	2.67	-0.45
Displacement of People	445	110	4.05	0.93
Electrocution	147	110	1.34	-1.78
Loss of Houses and Investments	446	110	4.05	0.93
Decrease in Production and Purchasing Power	356	110	3.24	0.12
			43.71/14=3.12	

Source: Field Survey (2017)

A summary of the impacts of flood is presented in Table 5. SMV implies Summation of Weighted Values, TNR is

the Total Number of Responses, RLQI is the Respondents' Level of Quality Index and MD means Mean deviation. To Obtain the RLQI, a value of 5, 4, 3, 2, and 1 was assigned to Very High, High, Low, Very Low and No Impact Respectively. The frequency of each of the components was multiplied by the assigned value and summed up to give the SWV. The SMV was divided by the TNR to get the RLQI. A mean of the RLQI was obtained and the deviation from the mean was obtained as the Mean Deviation.

The distribution in Table 5 reveals that the deviation of nine of the 14 variables tested positive while the remaining five tested negative. By implication, many of the respondents are of the view that floods have fairly negative effects on them. A closer look suggests that damage to and loss of infrastructure are the most significant losses from floods. This has a RLQI of 4.19. Conversely, loss of life through electrocution is the least loss from flood in the study area and this has an RLQI of 1.34.

Although floods generally have effects on lives, electricity, land for agriculture, electrocution and the outbreak of epidemics and diseases (Fadairo, 2013; OPW, 2009; APFM, 2006; UN-Habitat, 2003), in Osogbo, these have negative deviations from the mean. Respondents did not consider the outbreak of diseases and epidemics as impacts of floods as suggested by literature. These statistics suggest that the impact of flooding is mild in Osogbo. In addition, loss of agricultural land to flood is not considered as an effect of flood in the study area. This might be because agriculture is not a dominant practice in Osogbo. However, in Gbonmi area, it was reported that vegetable farms have been lost to floods.

Table 6: Ease of Recovering from Flood Losses

	Frequency	**Percentage (%)**
Very Easy	1	0.9
Difficult	17	15.5
Very Difficult	89	80.9
No Response	3	2.7
Total	**110**	**100.0**

Source: Field Survey (2017)

Table 6 presents the distribution of respondents by their perception of the ease of recovering from flood losses. 89% of the respondents were of the view that recovery from flood losses is very difficult, 15.5% stated that it is difficult to recover whole 0.9% states that recovery from flood losses is easy. 2.7% of the respondents failed to respond to the question. This table conforms to the various propositions by APFM (2006), OPW (2009) and UN-Habitat (2003) on the difficulty experienced in recovering from flood incidences.

5. 3 Community Perception and Participation in Flood Management

Table 7: Institution Responsible for Flood Management

Who is Responsible For Flood Management?	**Response**	**Frequency**	**Percentage (%)**
Osun State Government	Yes	102	92.7
	No	8	7.3
	Total	**110**	**100.0**
Community Based Organization	Yes	2	1.8
	No	108	98.2
	Total	**110**	**100.0**
Landlord Association	Yes	5	4.5
	No	105	95.5
	Total	**110**	**100.0**
Nobody	Yes	4	3.6
	No	106	96.4
	Total	**110**	**100.0**

Source: Field Survey (2017)

The distribution presented in Table 7 above highlights community perception on the institution responsible for flood management in the study area. The distribution reveals that majority of the respondents (92.7%) believed that the government is saddled with responsibility of flood management. Though it is not unexpected that government play great roles in flood management, complete and absolute dependence on external support in flood

management reduce community's resilience and compound vulnerability to flood disasters (UNISDR, 2009). However, the distribution in Table 7 does not project non-involvement of communities in flood management in Osogbo. Tables 8 and 9 shows community involvement in flood management in the various flood prone communities of Osogbo.

Table 8: Community Involvement in Flood Management

Nature of Involvement in Flood Management	Response	Frequency	Percentage (%)
Passage of Information	Yes	19	17.3
	No	91	82.7
	Total	**110**	**100.0**
Direct and Active Participation	Yes	14	12.7
	No	96	87.3
	Total	110	100.0
Creation of Awareness	Yes	36	32.7
	No	74	67.3
	Total	**110**	**100.0**
No Action	Yes	54	49.1
	No	56	50.9
	Total	**110**	**100.0**

Source: Field Survey (2017)

Table 8 presents the distribution of respondents by their involvement in flood management. Though 50.9% to no action in response to flood, a significant proportion (49.1%) contributed to flood management. Most of the respondents who were involved in flood management participated through creation of awareness (32.7%) and passage of information (17.3%). Only 12.7% participated actively and directly to reduce the incidence and impact of floods. Table 9 below highlights the forms of participation in flood management in the study area.

The distribution reveals that frequent clearing of drainage channels (84.5%) and proper refuse disposal (76.4%) were majorly the direct ways respondents participated in flood management. Very few (2.7%) contributed financially to flood management. A possible explanation for this may be because of the income distribution of the respondents as earlier discussed in the work. Also, only 4.5% of community members participated in the construction of drainages while only 2.7% participated in public enlightenment programs. 0.9 % attended flood management seminars and trainings. These suggest that community members may be comfortable to participate in flood management at their own pace with little or no financial obligation.

Table 9: Forms of Participation in Flood Management

Form of Participation in Flood Management	Response	Frequency	Percentage (%)
Construction of Drainages	Yes	5	4.5
	No	105	95.5
	Total	**110**	**100.0**
Frequent Clearing of Drainage Channel	Yes	93	84.5
	No	17	15.5
	Total	**110**	**100.0**
Participation in Flood Management Seminars and Trainings	Yes	1	0.9
	No	109	99.1
	Total	**110**	**100.0**
Participation in Public Enlightenment Programs	Yes	3	2.7
	No	107	97.3
	Total	**110**	**100.0**
Financial Contributions to Flood Management	Yes	3	2.7
	No	107	97.3
	Total	**110**	**100.0**
Proper Refuse Disposal	Yes	84	76.4
	No	26	23.6
	Total	**110**	**100.0**
No Action	Yes	8	7.3
	No	102	92.7
	Total	**110**	**100.0**

Source: Field Survey (2017)

5. 4 Institutional Activities in Flood Management

Table 10: Activity of Government in Flood Management

Activity of Government in Flood Management	Response	Frequency	Percentage (%)
Demolition of Structures Perceived to be Blocking Drainage	Yes	48	43.6
	No	62	56.4
	Total	**110**	**100.0**
Construction of Bridges and Culverts	Yes	33	30.0
	No	77	70.0
	Total	**110**	**100.0**
Construction of Drainages	Yes	95	86.4
	No	15	13.6
	Total	**110**	**100.0**
Creation of Awareness and Mass Mobilization	Yes	16	14.5
	No	94	85.5
	Total	**110**	**100.0**

Source: Field Survey (2017)

In Table 10 above, the activities of the government in flood management is presented. Among its activities, construction of drainages (86.4%) is mostly embarked on. This is closely followed by demolition of structures perceived to be blocking drainage channels and construction of bridges and culverts with frequencies of 43.6% and 30% respectively. Only 14.5% of the respondents documented that the government is involved in the creation of awareness and mass mobilization for flood management. Table 11 below reveals that the government has been responsive to flood complaints. While 37.3% and 47.3% noted that the government have been very responsive and responsive respectively, only 11.8% noted that the government is not responsive to flood complaints.

Table 11: Degree of Government's Responsiveness to Flood Complaints

	Frequency	Percentage (%)
Very Responsive	41	37.3
Fairly Responsive	52	47.3
Not Responsive	13	11.8
Not Sure	2	1.8
No Response	2	1.8
Total	**110**	**100.0**

Source: Field Survey (2017)

6. 0 Conclusion

This study has so far examined community and institutional responses to flood management in Osogbo through a perceptual analysis. It revealed that in the various flood prone areas of Osogbo, continuous dependence on government support has limited community involvement in flood management. The situation is further compounded by the limited financial and technical capacities of community members. Lack of knowledge of flood management strategies have also limited community involvement in flood management in Osogbo.

With the greater burden of flood management placed on the government, it is important to enlighten and educate residents in flood prone communities on the ways through which they can be involved in flood management. This enlightenment should emphasize non-financial ways of participation in flood management. An improvement in the economic situation of residents through empowerment and support for small enterprises can also facilitate effective contribution in flood management. Policies should be formulated to saddle communities, community-based organizations, and community leaders with the responsibility of flood management in the respective communities.

Seminars and workshops on flood management and appropriate responses should be conducted periodically

by the government and by community-based organizations both by using the mass media and directly in the different flood prone communities. The government should continue to contribute to flood reduction through construction of drainages and bridges as well as through imposing sanctions on violators of waste management and development control regulations. Building close to rivers and flood channels should be discouraged. A clear line of reportage of flood threats and occurrence should also be established. A joint and inclusive strategy for flood management should also be developed to facilitate complementary contribution to flood management by communities and from the government.

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